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United States General Accounting Office

Report to the Chairman, Subcommittee on Energy and Power, Committee on Energy and Commerce, House of Representatives

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NUCLEAR WASTE

Termination of Activities at Two Sites Proceeding in an Orderly Manner

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Resources, Community, and
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February 6, 1989

The Honorable Philip R. Sharp
Chairman, Subcommittee on Energy and Power,
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

On March 1, 1988, you asked us to review the Department of Energy's (DOE) efforts to terminate, as directed by 1987 amendments to the Nuclear Waste Policy Act of 1982, nuclear waste repository program activities at sites in Washington and Texas. DOE was studying these locations to determine whether they are suitable for a nuclear waste repository. You requested that we focus our review on (1) DOE's compliance with the statutory deadline for terminating site-specific activities, (2) the extent to which DOE continued such activities under the rubric of general research, and (3) expenditures made during the termination period. This report discusses the results of our review.

Results in Brief

DOE's efforts to terminate activities at the two sites appear to have been consistent with a reasonable interpretation of the 1987 amendments. Specifically,

- with the exception of continuing operation of a seismic network at one site that provides information useful to other DOE programs, site-specific activities appear to have been terminated within the allowable time period;
- we found no basis to conclude that site-specific activities have been continued as general research; and
- the total cost to phase out all work at the two sites is estimated to be about $116 million, or about $25 million less than the original estimate.

The cost estimate is subject to resolution of a few uncertainties related to restoring land disturbed by waste program activities. Also, the estimate does not include potential payments to state and local governments in Washington equal to the amount that these governments would receive if they were authorized to tax waste program activities. These governments have filed claims amounting to $67 million. Finally, states and Indian tribes affected by the project in Washington believe that DOE should provide continuing financial support of their efforts to monitor

all DOE activities at the site and, with respect to the tribes, DOE's project termination activities.

Background

Under a program established by the Nuclear Waste Policy Act of 1982, DOE was preparing to characterize (investigate) three places as potential sites for the nation's first geologic repository for permanent disposal of highly radioactive nuclear waste. However, in response to mounting opposition to DOE's program and because of its increasing cost, the Congress redirected the program in December 1987. Specifically, the Nuclear Waste Policy Amendments Act of 1987—contained in title V of the Budget Reconciliation Act for Fiscal Year 1988 (P.L. 100-203)—directed DOE to determine whether Yucca Mountain, Nevada, is suitable for a repository and, if so, to seek authorization from the Nuclear Regulatory Commission to construct a repository there.

The 1987 amendments also directed DOE to provide for an "orderly phase-out" of site-specific activities at all other candidate repository sites. DOE was to terminate all "site-specific activities" within 90 days of the effective date of the amendments, except for reclamation activities needed to restore areas already disturbed by project activities. The amendments took effect on December 22, 1987, and the 90-day period ended on March 21, 1988.

The two candidate repository sites required to be terminated are the Basalt Waste Isolation Project at DOE's Hanford Reservation in Washington and the Salt Repository Project in Texas. The Salt Repository Project assessed seven potential sites in the states of Texas, Louisiana, Mississippi, and Utah for a repository in a salt formation. Using the information developed in these assessments, in May 1986 the Secretary of Energy recommended, and the President approved, selection of a candidate site in Deaf Smith County, Texas.

When the 1987 amendments were passed, DOE was engaged in a wide variety of planning and data-gathering activities in preparation for determining the suitability of the Washington and Texas sites for repositories. In addition, some activities, such as reclamation of borehole sites, at former Salt Repository Project locations in Louisiana, Mississippi, and Utah had not been completed; thus, these activities are also being phased out. Also, DOE had grants with those three states, the states of Texas, Oregon, and Washington, and three Indian tribes to assist the states and tribes in studying the suitability of repository sites associated with these projects.

From fiscal years 1983 through 1987, DOE had spent $406 million and $449 million on the Basalt and Salt Repository Projects, respectively. Further, on the basis of project office budget requests for fiscal year 1989, DOE estimated that the additional cost of completing detailed investigations of the two sites by 1995 would amount to about $2.0 billion and $1.2 billion, respectively. All of these cost figures are in year-of-expenditure dollars.

Termination of Project Activities Appears Consistent With Amendments

By the day after passage of the amendments, Basalt and Salt Repository Project officials had begun planning phaseout activities. They completed termination plans for each project in February 1988, and the plans were subsequently approved, with modifications, by DOE headquarters. The plans were developed to (1) protect large investments in property, data, and technologies; (2) minimize adverse effects on displaced workers; and (3) comply with pertinent laws, regulations, or other applicable requirements.

Officials of both projects reported that many activities were either stopped immediately or completed within the 90-day period. To cite a few of many examples, Basalt Project officials reported that they immediately stopped developing baseline plans for the repository and active testing on how to package repository waste. Salt Repository Project officials reported that they immediately halted efforts to acquire land for the Deaf Smith County repository site and stopped their efforts to design nuclear waste containers.

Many other activities continued after the 90-day period, but DOE did not consider these activities subject to this deadline. The continued activities generally involved completing documentation of project activities, carrying out other administrative tasks needed for an orderly phaseout, or restoring site areas.

The process that DOE followed to terminate Basalt and Salt Repository Project activities appears consistent with the 1987 amendments. Although we started our fieldwork after March 21, we confirmed that project personnel at both sites had been involved in a major effort to shut down project activities. Appendix I contains a more detailed discussion of DOE's project termination activities.

Activities Not Continued as General Research

We found no basis to conclude that activities at either project are being continued as general research. Salt Repository Project officials said that all activities underway at the time of the 1987 amendments will be phased out, and we identified no information contradictory to this claim. At the Basalt Project, DOE officials said that they will continue three activities by obtaining funds from nonnuclear waste program sources. None of these activities appeared to be a continuation of repository research. The activities are

- Eastern Washington seismic monitoring. For several years, the Basalt Project funded a contract to operate a seismic monitoring network in eastern Washington. Project officials told us that because there are many nonrepository nuclear activities and facilities on the Hanford Reservation, such as temporary nuclear waste storage tanks, a plutonium/uranium extraction plant, and operational and decommissioned reactors, this seismic data is still needed. Therefore, the network will be continued with DOE nonnuclear waste program funds at an estimated annual cost of $120,000.
- Hanford seismic monitoring. The Basalt Project was funding a network of seismic monitoring stations on Hanford Reservation to supplement the information provided by the eastern Washington network. For the reasons discussed above, project officials said local seismic monitoring will continue with other DOE funds because of the general need for seismic data at Hanford. DOE officials estimated future annual costs to DOE at $280,000.
- Boreholes. Project officials said that management of 33 boreholes drilled for the Basalt Project will be transferred to other DOE programs because of the monitoring data that can be obtained from these boreholes. They noted, for example, that other DOE programs need these boreholes to help monitor for hazardous or radioactive materials that could leak from waste storage areas or disposal areas. Under the transfer, responsibility for the eventual reclamation of the boreholes will rest with other DOE programs and save the nuclear waste program about $830,000.

Termination Costs

The total cost to phase out the two projects is estimated to be about $116 million. This estimate is about $25 million below the original cost estimates contained in the February 1988 phaseout plans. Table 1.1 compares the original (February 1988) Basalt and Salt Repository Project estimates of phaseout costs to the latest estimates made in November/December 1988. Most of the reduction in cost estimates is attributable to a potential cost underrun at the Basalt Project.

Table 1.1: Phaseout Cost Estimates

Dollars in millions

	February 1988 estimate	Fall 1988 estimate			
	Total	FY 88	FY 89	FY 90	Total
Salt Project	$53.0	$32.6	$16.7	$1.1[a]	$50.4
Basalt Project	88.6	40.8	16.7	8.4[b]	65.9
Total	**$141.6**	**$73.4**	**$33.4**	**$9.5**	**$115.3**

[a]According to a Salt Repository Project official, this figure includes a $200,000 contingency for activities that possibly could extend into fiscal year 1990 and $300,000 per year for storing core samples through fiscal year 1992.

[b]According to a Basalt Repository Project official, the phaseout budget for fiscal year 1990 includes $83,000 to store records and core samples at Hanford through fiscal year 1992.

Actual costs could be higher than the estimates shown in the table for two reasons:

- Uncertainties associated with remaining phaseout tasks at the Basalt Project could significantly affect final costs and delay completing the phaseout past fiscal year 1990.
- Cost estimates for the Basalt Project exclude a potential liability of about $67 million to state and local governments for payments equal to taxes.

Appendix II contains a more detailed discussion of DOE's cost estimates for phasing out the two projects.

Grantee Concerns

Representatives from the two states (Washington and Oregon) and three Indian tribes (Nez Perce, Yakima, and Umatilla) that were receiving grants to study Basalt Project activities told us of their concerns about future financial support. First, the Indian tribes believe that DOE has an obligation under repository program legislation to provide them financial support to monitor all phases of the reclamation effort. They noted, however, that their grants will expire on December 22, 1988, whereas reclamation activities will last until fiscal year 1990 or beyond. According to Basalt Project officials, DOE's interpretation of the waste act, as amended, is that DOE cannot provide financial support after December 22, 1988; however, it will continue to arrange site tours and/or provide the tribes with information to assist continued reclamation monitoring.

Second, the affected states and tribes believe that DOE should provide them with financial assistance for monitoring all ongoing activities at

Hanford Reservation, such as efforts to clean up nuclear waste sites. Although DOE officials said they will continue to provide information to the states and tribes on Hanford activities, they noted that there is currently no legal authorization for providing continued financial assistance.

We conducted our review at DOE headquarters in Washington, D.C., and at DOE project offices in Richland, Washington, and Hereford, Texas. Our objectives, scope, and methodology are discussed in appendix III.

In December 1988 and January 1989 we discussed the facts presented in this report with Basalt and Salt Repository Project officials and DOE's Office of Civilian Radioactive Waste Management. We incorporated their views where appropriate. As requested, we did not ask DOE to review and comment officially on this report. Our review was conducted between March and November 1988 in accordance with generally accepted government auditing standards.

Unless you publicly announce its contents earlier, we plan no further distribution of this report for 30 days. At that time we will send copies to the appropriate congressional committees, the Secretary of Energy, and other interested parties. We will also make copies available to others upon request.

Major contributors are listed in appendix IV.

Sincerely yours,

Keith O. Fultz

Keith O. Fultz
Senior Associate Director

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Contents

Letter		1
Appendix I Termination of Project Activities Appears Consistent With Amendments		10
	DOE's Approach to Terminating Activities Was Reasonable	10
	Termination Activities Were Consistent With DOE's Approach	12
Appendix II Termination Costs		14
Appendix III Objectives, Scope, and Methodology		17
Appendix IV Major Contributors to This Report		18
	Resources, Community, and Economic Development Division, Washington, D.C.	18
	Seattle Regional Office	18
Table	Table 1.1: Phaseout Cost Estimates	5

Abbreviations

DOE	Department of Energy
GAO	General Accounting Office

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Termination of Project Activities Appears Consistent With Amendments

The process that the Department of Energy (DOE) followed to terminate Basalt and Salt Repository Project activities appears consistent with the 1987 amendments to the Nuclear Waste Policy Act of 1982. Although many activities continued after the 90-day period, these activities were not considered subject to this deadline. The continued activities generally involved completing documentation of project activities, carrying out other administrative tasks needed for an orderly phaseout, or restoring site areas.

DOE's Approach to Terminating Activities Was Reasonable

The 1987 amendments contained two provisions pertaining to the termination of project activities. They required DOE to terminate "site-specific activities" within 90 days of the effective date of the amendments (December 22, 1987), except for reclamation activities needed to restore areas already disturbed by project activities. The 90-day period ended on March 21, 1988. The amendments also required an "orderly phaseout" of site-specific activities. Neither provision was further defined.

Basalt and Salt Repository Project officials stated that they interpreted these provisions as follows:

- The March 21 deadline applied only to site-specific activities, that is, activities that would result in gathering additional information to further the characterization (investigation) of a site as a potential nuclear waste repository.
- "Orderly phaseout" meant that all activities needed to phase out the projects were to be conducted in a controlled fashion, but only site-specific activities (as defined above) were subject to the termination deadline. An orderly phaseout of many non-site-specific tasks, such as properly disposing of property and compiling and placing project records into permanent storage, could not have been accomplished by March 21. Accordingly, timetables were established for completing non-site-specific activities beyond that date if necessary to complete an orderly phaseout.

By the day after passage of the amendments, officials at both locations had begun planning phaseout activities. Termination plans were completed for each project in February 1988 and were subsequently approved, with modifications, by DOE headquarters. Specific aspects of the termination approach, as discussed in these plans, in other documents, and/or by project officials, provided for the following:

- Terminating ongoing activities as soon as reasonably possible depending upon the state of completion of each activity. Project officials said that in some cases it made sense to complete the current step of an activity before documenting results. Salt Repository Project officials said they did not think that the Congress intended to lose the project's investment in the development of scientific information and technology through a precipitous stoppage of activities if a small extension of time to provide for an orderly phaseout of these activities would result in a more usable and permanent record of their results.
- Documenting project studies and investigations to update the status of each activity upon termination. Project records were to be subsequently processed and stored to allow access by others.
- Inventorying and disposing of project property and equipment costing about $52 million. In general, equipment was to be offered to other nuclear waste program activities and then to other government programs before selling it at fair market value. Sales proceeds were to reduce phaseout costs paid out of the Nuclear Waste Fund.[1]
- Laying off project personnel as termination activities were completed. By September 30, 1988, contractor staffing levels were to be reduced from 1,460 to 179. To help the many displaced DOE and contractor personnel find other employment, outplacement activities were planned.
- Phasing out all grants to states and Indian tribes. States were restricted to using funds from grants in effect as of December 22, 1987, to phase out their activities, whereas Indian tribes could be provided new grant funds up to December 22, 1988, as authorized by section 118 (b)(5) of the Nuclear Waste Policy Act, as amended, if funds from existing grants were insufficient.
- Returning, to the extent practicable, areas disturbed by project activities to their original condition. Planned reclamation activities included removing structures and reseeding the sites with natural vegetation. Reclamation activities were expected to be completed by the Salt Repository Project in fiscal year 1989 and by the Basalt Project in fiscal year 1990.

In our view, DOE's planned approach represented a reasonable interpretation of the requirements of the 1987 amendments. DOE officials agreed that the approach was developed, in part, to ensure that (1) the projects' large investments in property and the development of plans, data, and

[1]The Nuclear Waste Fund is a separate fund in the Treasury of the United States used to finance waste program activities. Revenues in the fund are derived from fees collected from owners and generators of wastes and from interest earned on investments of revenues in excess of current needs.

technologies would be protected; (2) adverse effects on displaced workers would be minimized; and (3) no "loose ends" would remain through failure to comply with pertinent laws, regulations, or other applicable requirements.

Termination Activities Were Consistent With DOE's Approach

Officials of both projects reported that many activities were either stopped immediately or completed within the 90-day period. To cite a few of many examples, Basalt Project officials reported that they immediately stopped developing baseline plans for the repository and active testing on how to package repository waste. Within the next 90 days, they said that they closed public information offices and phased out all activities at the project's Near Surface Test Facility. Salt Repository Project officials reported that they immediately halted efforts to acquire land for the Deaf Smith County repository site and stopped their efforts to design nuclear waste containers. Among other activities terminated by March 21 was an evaluation of potential ways to reduce the cost of constructing the planned exploratory shaft facility at the Salt Repository Project. This evaluation, they said, has applicability to any effort to design exploratory shafts.

Although we started our fieldwork after March 21, we confirmed that project personnel at both sites had been involved in a major effort to shut down project activities. For example, in April we toured repository project activities at Hanford Reservation and observed that (1) nearly all equipment and utilities had been removed from the project's Near Surface Test Facility, (2) the drill rig that had been in place to begin the first exploratory shaft had been removed, and (3) a complex of laboratories used for project activities was locked and its equipment appeared ready for removal.

Many activities continued past March 21, 1988; however, except for the brief continuation of a seismic monitoring network, these activities appeared to meet DOE's interpretation of items subject to an orderly phaseout rather than site-specific activities subject to the 90-day termination requirement. These activities generally involved (1) documenting project activities and results, (2) carrying out other administrative tasks to terminate the projects, or (3) restoring site areas (reclamation). In all instances, officials at the two projects considered the activities critical to an orderly phaseout.

Several tasks relating to documenting project activities continued after March 21. According to project officials, these involved completing the

results of plans or studies for which basic data-gathering work had been finished to ensure usable records of results. For example, project officials said that they completed writing a cultural resources plan[2] for Hanford in part because they believed the plan would have a bearing on how reclamation efforts would be carried out to protect cultural resources on the Hanford Reservation. At the Salt Repository Project, a final report on various approaches to handling nuclear waste was completed after March 21 because of the potential importance of these efforts to the repository program at Yucca Mountain. For these and other examples in this category, the documentation efforts were generally completed within a month or so of the March 21 date, according to information provided by project officials.

With regard to administrative activities, both projects continued a wide range of activities considered vital to orderly project termination. These included efforts to (1) close out and settle contracts and grants; (2) inventory, transfer, or sell equipment; (3) compile, catalog, and process records for permanent storage; and (4) assist displaced DOE and contractor personnel. DOE officials reported that these administrative activities had largely been completed by the end of fiscal year 1988.

We identified one instance at the Basalt Project in which a site-specific activity continued to be supported with about $18,000 in project funds for a 5-week period after March 21. This activity involved the operation of a seismic network in eastern Washington by a state university. Project officials said that the 5-week contract extension was necessary to make final determinations as to whether and how this activity should be continued by DOE's Office of Defense Programs without financial support from the nuclear waste program. Cutting off financial support prior to making this decision was not considered a viable alternative. As such, project officials said, the short-term continuation was consistent with the requirement to provide an orderly closeout of project activities.

[2]The purpose of the cultural resources plan, according to a Basalt Repository Project official, was to comply with state and federal laws by establishing an approach for protecting the many cultural resources on the Hanford Reservation (e.g., abandoned town sites and Indian burial grounds and other religious locations) from being destroyed by construction or other site-disturbing activities.

Termination Costs

Recent estimates made by the Basalt and Salt Repository Project offices indicate that the total cost to phase out the projects will be about $116 million. This estimate covers costs from January 1, 1988, to completion and is about $25 million below the original cost estimates contained in the February 1988 phaseout plans. Most of this reduction is attributable to a potential cost underrun at the Basalt Project. Actual costs, however, could be higher than the most recent estimate for two reasons:

- Uncertainties associated with remaining phaseout tasks at the Basalt Project could significantly affect final costs and delay completing the phaseout past fiscal year 1990.
- Cost estimates for the Basalt Project exclude a potential liability of about $67 million to state and local governments for payments equal to taxes.

In October 1988 a Salt Repository Project official said that he anticipated that all major phaseout activities will be completed in fiscal year 1989 as originally planned. The official said that the major remaining phaseout tasks are to (1) complete records processing and storage activities, (2) finalize closeout settlements with contractors, and (3) complete reclamation of borehole locations at the previously assessed repository sites in Utah, Louisiana, and Mississippi. He said that it is not likely that major problems with these activities would occur to substantially affect their latest cost estimate or delay completing phaseout tasks past fiscal year 1989.

Basalt Project officials attributed the large reduction in their February 1988 cost estimate to the following factors:

- The original cost estimates were developed quickly and provided for many potential "unknowns" that could significantly affect actual costs. For example, the estimate included about $10 million in reserves and contingencies for unanticipated costs in fiscal year 1988. These funds, however, were not needed.
- Many closeout tasks were finished substantially earlier than planned and well under budgeted costs. In keeping with a commitment to keep costs as low as possible, Basalt Project personnel often identified ways to complete tasks more efficiently and did not "drag out" activities because of available funding.
- The transfer of 33 boreholes to other programs at Hanford saved about $830,000 in reclamation costs.
- Personnel levels were reduced faster than originally planned, saving an estimated $1.5 million.

- Project costs were reduced by about $935,000 from credits resulting principally from property and equipment sales to DOE and its program contractors at public auction.

In November 1988 Basalt Project officials said uncertainties associated with several reclamation activities could significantly affect final costs and delay completing the phaseout until after fiscal year 1990. The major uncertainties they cited are as follows:

- Borehole mud pits.[1] Evaluation of the content of the mud pits could show the presence of hazardous materials, and a substantial effort may be required to deal with these materials. The phaseout plan contained a $7 million estimate for mud pit reclamation.
- Laboratory waste pond. Evaluation of the contents of a drainage pond that may contain hazardous waste from Basalt Project laboratories has not been completed. Because specific cleanup strategies remain to be developed and then approved by the state of Washington, the reclamation cost is uncertain. Potentially, costs could be higher than the current $4 million estimate, and reclamation efforts could go well past fiscal year 1990.
- Revegetation. In fiscal year 1990, DOE plans to evaluate the success of efforts to revegetate many borehole locations, the Near Surface Test Facility, and the exploratory shaft area. If the efforts have not been completely successful, additional funds may be required and completion dates may be delayed. The estimated cost of the initial revegetation effort is about $2.5 million.

Distributions of payments equivalent to taxes to state and local governments are another potential cost. Under subsection 116(c) of the Nuclear Waste Policy Act of 1982, affected governmental units are entitled to payments equal to the amount they would receive if they were authorized to tax site characterization activities.

Two claims for payments equal to taxes were submitted against the Basalt Project in July and August 1988. The claims total about $67 million—$49 million from Washington State and $18 million from local governments in Washington. However, the 1982 waste act was not specific as to how the payments would be computed, and in December 1988, a DOE official said that the agency was still determining the rules governing computation of the payment of claims. Basalt Project officials

[1]Borehole mud pits are earthen trenches near most borehole sites where fluids used in drilling operations have been stored.

said these payments are not included in their estimates of phaseout costs because management of these payments is a DOE headquarters activity.

Salt Repository Project officials told us they do not expect any claims for such payments.

Objectives, Scope, and Methodology

The objectives of our review were to evaluate three areas dealing with the termination of repository program activities at Hanford, Washington, and Deaf Smith County, Texas: (1) DOE's compliance with the legislative directive to cease site-specific activities by March 21, 1988, (2) the extent that project activities continued under the rubric of general research, and (3) expenditures to phase out the two projects. Additionally, we wanted to broadly review key aspects of the phaseout planning and implementation process to determine the general reasonableness of approaches taken. To meet these objectives, we

- interviewed DOE officials on their interpretations of the legislative requirements for terminating the projects, and assessed the general reasonableness of their views;
- reviewed documents dealing with termination plans, costs, and activities, including guidance developed by DOE headquarters and the two project offices, project plans of February 1988, the projects' closeout reports prepared in March, a status report prepared in April 1988 for a congressional committee, and updated data on costs and/or project activities covering fiscal year 1988;
- discussed with DOE project and/or contractor officials the development of termination plans, the justification for activities continuing past March 21, 1988, the status of phaseout activities, major uncertainties that could affect termination costs and schedules, and questions stemming from our review of project documentation; and
- discussed DOE's project termination efforts with representatives of affected states and Indian tribes.

At the Basalt Project, where the expected termination cost was larger and many areas on the reservation would be in need of reclamation, we attended meetings between DOE and/or contractor personnel in which termination status and issues were discussed. We also made inspections of project areas to observe the nature and status of planned reclamation activities.

We completed our fieldwork in September 1988; however, we also obtained additional information through November 1988 to update financial data through the end of fiscal year 1988. In December 1988 and January 1989 we discussed the facts presented in this report with Basalt and Salt Repository Project officials and DOE's Office of Civilian Radioactive Waste Management to ensure the accuracy of our report. We incorporated their views where appropriate.

Major Contributors to This Report

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